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ENTRIES 1162-1371

BOTANICAL EDUCATION

C. STUART GAGER, *Editor*

1162. RICHARDSON, A. E. V. **Agriculture. America and Australia compared.** Jour. Dept. Agric. Victoria **17**: 1-20. *1919.*—See Bot. Absts. 3, Entry 162.

FOREST BOTANY AND FORESTRY

RAPHAEL ZON, *Editor*

1163. ANONYMOUS. **The forestry situation in New South Wales.** Amer. Forestry **25**: 862-863. 1919.

1164. ANONYMOUS. **Note on Corypha palm in North Kanara.** Indian Forester **44**: 509-510. Nov., 1918.—The character of the forests in which the corypha palm (sp?) is described, with the character of its reproduction power and longevity. The pith found in mature trees is of great value for flour. Leaves are used for umbrellas and the seeds for ornaments.—*E. N. Munns.*

1165. ANONYMOUS. **Manitoba 75 per cent under forest.** Canadian Forestry Jour. **14**: 13-15. Jan., 1919.—About 75 per cent of Manitoba is forested, the forests extending northward till the "barren lands" are reached. White spruce is the only species of much value, growing to 36 inches in diameter and 90 feet in height. Fire has caused much damage and many regions have not reforested. The annual cut is around 15 million board feet. Pulpwood offers great possibilities and peat may be secured. The possibility of securing a steady revenue from the forest is discussed together with Sweden's example in forest practices under similar climatic conditions.—*E. N. Munns.*

1166. BESLEY, F. W. **Forest opportunity on pine lands in the South.** Amer. Forestry **25**: 983-984. 1919.

1167. BLANFORD, H. R. **Note on operations in bamboo flowered areas.** Indian Forester **44**: 550-559. 1918.—Observations show that during the flowering of bamboo, teak can get well established and make good growth before being suppressed. Artificial regeneration at the time is also easy.—*E. N. Munns.*

1168. CHAPMAN, HERMAN H. **Forests and floods in China.** Amer. Forestry **25**: 835-843. *21 fig.* 1919.—The influence of forests upon stream flow is considered with special reference to conditions in China. The disastrous Chihli flood of 1917 caused great loss of life, made

thousands of people homeless, destroyed houses and crops and greatly interfered with railway operation. The only practicable method of checking the floods is by reforestation of the denuded slopes. Without reforestation, the plains of China will continually be subject to floods of greater and greater severity. The need of China today is the creation of a national policy for reforesting the mountain slopes of northern China.—*Chas. H. Otis.*

1169. Clapp, Earle H. **Forest research—in the war and after.** Amer. Forestry 25: 947-950. *3 fig.* 1919.

1170. De, R. N. **Simul plantation in Jkums in Assam.** Indian Forester 44: 516–519. Nov., 1918.—The management of simul (*Bombax malabaricum*) is described. The tree requires 25 to 30 years to attain a 6 foot circumference, which is the best size for use in making tea boxes and for cold storage chests.—*E. N. Munns.*

1171. Fernow, B. E. **Why should a tree die?** Canadian Forestry Jour. 14: 1-11. Jan., 1919.—The dragon trees, a genus of the lily family, on the Teneriffe Island, many thousands years old, are 15 feet in diameter and 75 feet in height. The more rapid-growing Sequoias are much larger but only attain an age of 3,000 to 4,000 years at the most.—*E. N. Munns.*

1172. Fischer, C. E. C. **Cause of the spike disease of sandal.** Indian Forester 44: 570-575. 1918.—Observations on the disease are given, in connection with entomological work as a source of distribution of the disease.—*E. N. Munns.*

1173. Gaskill, Alfred. **Why wood is best.** Amer. Forestry 25: 991-994. *7 fig.* 1919.—*Popular.*

1174. Gibson, A. J. **The rosin and turpentine factory at Jallo, Punjab.** Indian Forester 44: 539-550. 1918.—A description of the operation and methods employed in a new still operated by the Forest Department is given.—*E. N. Munns.*

1175. Hole, R. S. **Notes from Dehra Dun Herbarium. Some Indian species of Zizyphus.** Indian Forester 44: 504–508. Nov., 1918.—A continuation of previous work. General descriptions and characteristics of the species of the genus are given, with notes and comments. —*E. N. Munns.*

1176. Howard, S. **Sal nurseries in Gorakhpur.** Indian Forester 44: 560–570. 1918.—Observations are given on three sal nurseries. It was found that the seedlings cannot stand transplanting unless with a ball of earth; working the soil is essential, no shade is needed for the young trees, and root and shoot cuttings are detrimental to the plant.—*E. N. Munns.*

1177. Lushington, P. M. **Progress of spike investigation.** Indian Forester 44: 439–460. Oct., 1918.—Results of the spike investigations in India appear to show that spike is a disease caused by microorganisms, infection being possible through animals, birds, insects and plants. The disease spreads more rapidly in seedlings that in trees, the spring months being most favorable. Incubation is uncertain and preventative measures so far have failed to stop the trouble. [See Bot. Absts. 2. Entries 1296, 1297, 1298, 1303, 1304, and 1307.]—*E. N. Munns.*

1178. Marsden, Edward. **Girth-increment of sal in regular crops in the United Provinces.** Indian Forester 44: 469–475. Oct., 1918.—The girth-increment of sal based on both total girth and on age is given and plotted on charts for different quality sites.—*E. N. Munns.*

1179. Maxwell, Hu. **The uses of wood. Wooden artificial limbs.** Amer. Forestry 25: 807–816. *16 fig.* 1919.

1180. MAXWELL, HU. **The uses of wood. Wood used in vehicle manufacture.** Amer. Forestry **25**: 845–852. *14 fig.* 1919.

1181. MAXWELL, HU. **The uses of wood. Fencing materials from forests.** Amer. Forestry **25**: 923–930. *18 fig.* 1919.

1182. MAXWELL, HU. **The uses of wood. Wooden boats and their manufacture.** Amer. Forestry **25**: 973–983. *19 fig.* 1919.

1183. MELROSE, GEORGE P. **Coupling the forest to the fruit farm.** Canadian forestry Jour. **14**: 8–11. Jan., 1919.—Irrigation interests of the Okanagan Valley require a steady water supply during the growing season, which is supplied by the forested mountains. General considerations of the effect of forests upon run-off and erosion are described. *E. N. Munns.*

1184. NICHOLSON, J. W. **Mesopotamia and afforestation.** Indian Forester **44**: 476–485. Oct., 1918.—It is problematic that the Mesopotamian country ever supported much forest, but the irrigation which is to be developed under British aid will call for a greater population and need for fuel and small sizes of timber. This can probably be grown to some extent in the irrigated lands, but it is doubtful if, with the small rainfall, it will be possible without the aid of additional water. It is possible that the higher country receives enough rainfall to make a growth of some kind of material possible. At best, the forest would be open and composed more or less of xerophytic species.—*E. N. Munns.*

1185. OSMASTON, A. E. **Note on some chir seed eaters.** Indian Forester **44**: 462–467. Oct., 1918.—Chir pine (*P. longifolia*) produces large quantities of edible seed which are destroyed by many agencies, though there is abundant reproduction. Man, monkies, flying-squirrels, wood-pigeons, nut-crackers, woodpeckers, and grosbeaks are the agencies responsible for this destruction, and each of these is discussed.—*E. N. Munns.*

1186. PEARSON, C. H. **Uses of the Brazil-nut tree.** Amer. Forestry **25**: 782–784. *5 fig.* 1919.—A popular description of *Bertholletia excelsa*, including tree characters, distribution, the wood and its uses, the native method of gathering the seeds, value of seeds exported and use of inner bark for making oakum.—*Chas. H. Otis.*

1187. PEARSON, R. S. **Preliminary note on the seasoning of some Indian timbers by natural methods.** Indian Forest Rec. **7**: 1–73. *1 pl.* 1919.—Tests were made in 6 provinces to determine the best treatment to be accorded both logs and timber. No one method was found to be suitable for every wood, and the result of the work is given for 33 woods in descriptive detail and in tables.—*E. N. Munns.*

1188. RAITT, WM. **Note on the prospects of manufacturing paper-pulp from Himalayan soft-woods.** Indian Forester **44**: 510–512. Nov., 1918.—At the date of writing the value of spruce and fir (*sp?*) wood has become greater in construction and manufacturing work than for paper-making, reducing the amount of pulp manufactured. Saw-mill waste is generally difficult to handle for pulp, but under present conditions it may become profitable. Figures are given on costs of installation of plants and possible profits.—*E. N. Munns.*

1189. RIDSDALE, P. S. **French forests for our army.** Amer. Forestry **25**: 963–972. *14 fig.* 1919.

1190. SWAINE, J. M. **Canadian bark beetles.** *4 parts. 31 pl., 262 fig.* Dominion Dept. Agric., Entomological Branch, Forest Insect Division: Ottowa. 1918.—Part 1, "Descriptions of new species," describes 40 new species of Canada and northern United States. Part 2 gives "A preliminary classification with an account of the habits and methods of control."

Part 3 gives a short account of the structural characters of bark beetles. Part 4 presents an arrangement of Canadian bark beetles with keys for their determination. [Through abst. in: Canadian Forest Jour. 14: 12. Jan., 1919.]—*E. N. Munns.*

1191. Tillotson, C. R. **The possibilities of farm woodland development under the Smith-Lever Act.** Amer. Forestry 25: 785-787. *4 fig.* 1919.

1192. Trevor, C. G. **A new system of timber exploitation.** Indian Forester 44: 525-527. Nov., 1918.—The yield of deodar, *Cedrus deodara*, is given by diameters and quality, three sites being recognized, for the Kulu Division. Volumes are given in cubic feet and in scantlings.—*E. N. Munns.*

GENETICS

George H. Shull, *Editor*

1193. Adami, I. G. **Medical contributions to the study of evolution.** *xviii* + 372 *p.* London, 1918.—*See also Bot. Absts. 2, Entry 1226; 3, Entry 585.*

1194. Allard, H. A. **Gigantism in Nicotiana tabacum and its alternative inheritance.** Amer. Nat. 53: 218-233. May-June, 1919.—See Bot. Absts. 3, Entry 216.

1195. Allard, H. A. **The Mendelian behavior of aurea character in a cross between two varieties of Nicotiana rustica.** Amer. Nat. 53: 234-238. May-June, 1919.—See Bot. Absts. 3, Entry 217.

1196. Bartlett, J. Gardner. **The increase, diffusion, and decline of the Mayflower and other New England stock.** Jour. Heredity 10: 141-142. Mar., 1919.

1197. Baur, E. **Über eine eigentümliche mit absoluter Koppelung zusammenhängende Dominanzstörung. [On a characteristic disturbance of dominance correlated with complete linkage.]** Ber. Deutsch. Bot. Ges. 36: 107-111. 1918.

1198. Baur, Erwin. **Mutationen von Antirrhinum majus. [Mutations of Antirrhinum majus.]** Zeitschr. indukt. Abstamm. Vererb. 19: 177-193. *10 fig.* June, 1918.—Preliminary paper summarizing in general fashion studies of a series of mutants of *Antirrhinum majus.* Apart from certain mutants in this species, involving chromatophore characters exhibiting non-Mendelian inheritance, all the mutants found appear to differ from their parent races in only one Mendelian factor. These latter number 20, and nearly all are "loss mutations" and recessives. Some have occurred several times, but most of them have been found but once. Three distinct modes of occurrence are described: 1. In the sexual descendants of one individual, the mutant may occur as a heterozygote (heterozygous mutant from seed). 2. In the sexual descendants of one individual, the mutant may arise as a homozygote (homozygous mutant from seed). 3. In a single plant, vegetative tissue areas or entire shoots may arise as heterozygous mutants.—Several examples of each mutant class are described in detail, together with figures illustrating their ancestry through several generations. In addition to the three classes above mentioned, a fourth may be assumed to occur (homozygous mutation from a single vegetative cell). Baur has never found this type in his cultures, and investigation of the literature has discovered only one case.—During the past 14 years, over 200,000 plants of *A. majus* have been studied and data on the relative frequency of the various classes or modes of mutation have been kept. Mutations under mode 1 approximate a frequency of 20 per cent.; under mode 2, a frequency of 0.05 per cent., the former occurring 40 times as often as the latter. Mutations of mode 3 type were observed in five cases, but owing to difficulties in detecting them, involving the character of the factorial composition of the material, many more cases no doubt occurred. Hence, this type or mode is assumed

to have the highest frequency, while types involving mode 4 are the rarest, if they occur at all in this species.—In *Antirrhinum* both varietal and specific genetic differences have been investigated, especially as regards the form, size, and color of the flowers. With but few exceptions all character differences studied Mendelize. Thirty factors in the floral organs alone of *A. majus* have been isolated. Owing chiefly to the much larger number of chromosomes in Antirrhinum (at least 15 pairs), the relative frequency of observed factor linkage is much less than in organisms such as *Hordeum* and *Drosophila* with comparatively few chromosomes. Only two linkage groups have so far been observed, each of which consists of 3 factors in which linkage or coupling is absolute. Both these groups are assumed to be localized in different chromomeres. Baur suggests that in certain chromosomes and chromomeres, mutations may take place more easily than in others.—*Orland E. White.*

1199. BECKING, BAAS. [Rev. of: KAPTEYN, J. C. **Skew frequency curves in biology and statistics.** Rec. Trav. Bot. Néerland. 13: 105-157. 1916.] Genetica 1: 183-187. Mar., 1919.

1200. BECKING, BAAS. [Rev. of: JENNINGS, H. S. **Heredity, variation and the results of selection in the uniparental reproduction of Difflugia corona.** *Genetics 1: 407-534. 1916.*] Genetica 1: 179-182. Mar., 1919.

1201. BECKING, BAAS. [Rev. of 2 papers: (1) HARRIS, F. S., AND J. C. HOGENSON. **Some correlations in sugar beets.** Genetics 1: 334-347. 1916. (2) PRITCHARD, F. J. **Correlations between morphological characters and the saccharine content of sugar beets.** Amer. Jour. Bot. 3: 361-376. *8 fig.* 1916.] Genetics 1: 170-172. Mar., 1919.

1202. BERNARD, N. **L'evolution des plantes. [The evolution of plants.]** *314 p., 29 fig.* Felix Alcan: Paris, 1918. See also Bot. Absts., 2, Entry 1244.

1203. BLAKESLEE, ALBERT F., AND B. T. AVERY, JR. **Mutations in the jimson weed.** *Jour. Heredity* 10: 111-120. *Fig. 5-15.* Mar., 1919.

1204. BRIDGES, CALVIN B. **The genetics of purple eye color in Drosophila.** Jour. Exp. Zool. 28: 255-305. May 20, 1919.—See Bot. Absts. 3, Entry 601.

1205. DAWSON, ANDREW IGNATIUS. **Bacterial variations induced by changes in the composition of culture media.** Jour. Bac. 4: 133-148. Mar., 1919.

1206. DECOUX, A. **Breeding of Crimson-eared Waxbill × Cordon Bleu hybrids.** Avic. Mag. 10: 102-103. Apr., 1919.—Several broods of hybrids were obtained from a female Cordon Bleu mated with a male Violet-eared Waxbill, but in no case were the hybrids brought to maturity, mostly on account of neglect by the parent birds.—*R. E. Clausen.*

1207. DECOUX, A. **Breeding of Melba Finch × Crimson-eared Waxbill hybrids.** Avic. Mag. 10: 110-111. Apr., 1919.—Three broods of hybrids were obtained from a Crimson-eared Waxbill hen mated to a Melba Finch cock. Hybrid fledglings resembled young Crimson-eared Waxbills, but were larger and showed distinct evidences of hybrid origin. A full description of adult hybrids is given. In shape they resembled Crimson-eared Waxbill, but in size and in song they were like the male parent.—*R. E. Clausen.*

1208. DELAGE, YVES. **Suggestion sur la nature et les causes de l'hérédité ségrégative (caractères mendéliens) et de l'hérédité agrégative (caractères non-mendéliens).** [Suggestion as to the nature and the causes of segregative heredity (Mendelian characters) and of aggregative heredity (non-Mendelian characters).] Compt. Rend. Acad. Sci. Paris. 168: 30-36. 1919.—Author rejects current explanation of heredity involving individuality of chromosomes and reduction division in maturation. Theory has required "tottering scaf-

folding" of accessory hypotheses "destined to fall in ruins." In its place author suggests following two propositions: First, sperm may in some cases initiate development of egg, but its chromatin not participate in that development (Baltzer on echinoderm crosses). Second, when chromatin of both parents is functional, maternal and paternal contributions may be relatively heterogeneous or homogeneous. If heterogeneous, microsomes (perhaps) of chromosomes do not fuse, later separate and bring about segregative (Mendelian) heredity. If homogeneous, microsomes may fuse completely, never separating into original components, accounting for aggregative (non-Mendelian, blending) inheritance. Variety of conditions may exist between these extremes. Qualitative characters probably depend upon heterogeneous chromatin, quantitative characters on homogeneous chromatin. Same chromosome may present different degrees of heterogeneity in different parts, so that certain characters are aggregative, others segregative. Different individuals of same race may show different degrees of heterogeneity.—*A. Franklin Shull.*

1209. Derschau, M. von. **Über disperme Befruchtung der Antipoden bei Nigella arvensis. [On double fertilization of the antipodals in Nigella arvensis.]** Ber. Deutsch. Bot. Ges. 36: 260–263. 1918.

1210. De Vries, H. **Phylogenetische und gruppenweise Artbildung. [Phylogenetic and group-wise formation of species.]** Flora 11, 12 (Festschr. Stahl.): 208–226. 1918.

1211. De Vries, H. **Halbmutanten und Massenmutationen. [Half mutants and mass mutations.]** Ber. Deutsch. Bot. Ges. 36: 193–199. 1918.

1212. Dresel, K. **Inwiefern gelten die Mendelschen Vererbungsgesetze in der menschlichen Pathologie? [To what extent do Mendelian laws of heredity hold in human pathology?]** Virchow's Arch. *224. 256 p.* 19—.

1213. Ernst, A. **Bastardierung als Ursache der Apogamie im Pflanzenreich; eine Hypothese zur experimentellen Vererbungs- und Abstammungslehre. [Hybridization as the cause of apogamy in the plant kingdom; an hypothesis for experimental evolution and genetics.]** 8vo. *xv + 655 p., 172 fig.* Gustav Fischer: Jena, 1918.—See also Bot. Absts. 2, Entry 1234.

1214. Freeman, Geo. F. **Heredity of quantitative characters in wheat.** Genetics 4: 1–93. Jan., 1919.—See Bot. Absts. 3, Entry 629.

1215. Frets, G. P. **Erfelijkheid en eugeniek. [Heredity and eugenics.]** Social Gids. 3: 23–38, 155–173. 1918.

1216. Fruwirth, C. **Handbuch der landwirtschaftlichen Pflanzenzüchtung. II. Die Züchtung von Mais, Futterrüben und anderen Rüben, Oelpflanzen und Gräsern. [Handbook of agricultural plant breeding. II. The breeding of maize, fodder beets, and other roots, oil plants and grasses.]** *3rd ed., 262 p., 50 fig.* P. Parey: Berlin, 1918.—See also Bot. Absts. 2, Entry 1245.

1217. Goebel, K. **Zur Kenntnis der Zwergfarne. [To a knowledge of the dwarf ferns.]** Flora 11, 12 (Festschr. Stahl): 268–281. 1918.

1218. Goedewaagen, M. A. J. [Rev. of: Freeman, G. F. **Linked quantitative characters in wheat crosses.** Amer. Nat. 51: 683–689. 1917.] Genetica 1: 161–162. Mar., 1919.

1219. Goedewaagen, M. A. J. [Rev. of: Lotsy, J. P. **Antirrhinum rhinanthoides mihi, une nouvelle espéce Linnéenne, obtenuè experimentalement. (Antirrhinum rhinanthoides mihi, a new Linnean species, derived experimentally.)** Arch. Néerland. Sci. 3: 195–204. 1916.] Genetica 1: 188–190. Mar., 1919.

1220. GOEDEWAAGEN, M. A. J. [Rev. of: JONES, D. F. **Linkage in Lycopersicum.** Amer. Nat. 51: 608–621. 1917.] Genetica 1: 182–183. Mar., 1919.

1221. JONES, D. F., AND C. A. GALLASTEGUI. **Some factor relations in maize with reference to linkage.** Amer. Nat. 53: 239–246. May–June. 1919.

1222. KATTUR, G. L. **An improved type of cotton for the southern Maratha Country.** Agric. Jour. India 14: 165–167. *Pl. 1.* 1919.—See Bot. Absts. 3, Entry 170.

1223. KEY, WILHELMINE E. **Better American families. II.** Jour. Heredity 10: 80–83. Feb., 1919.

1224. KEY, WILHELMINE E. **Better American families. III.** Jour. Heredity 10: 107–110. Mar., 1919.

1225. KIRKHAM, WILLIAM B. **The fate of homozygous yellow mice.** Jour. Exp. Zool. 28: 125–135. *2 fig.* May 20, 1919.—See Bot. Absts. 3, Entry 264.

1226. KOHLBRUGGE, J. H. F. [Rev. of: ADAMI, I. G. **Medical contributions to the study of evolution.** *xviii+ 372 p.* London, 1918.] Genetica 1: 149–152. Mar., 1919.

1227. KOHLBRUGGE, J. H. F. [Rev. of: LUSCHAN, F. VON. **Kriegsgefangene.** [*Prisoners of war.*] *117 p.* Reimer: Berlin, 1917.] Genetica 1: 190–192. Mar., 1919.

1228. KOOIMAN, H. N. ***Overzicht over enkele Oenothera problemen.*** [*Review of a few Oenothera problems.*] Genetica 1: 134–148. Mar., 1919.

1229. KOOIMAN, H. N. [Rev. of: GATES, R. R. **Vegetative segregation in a hybrid race.** Jour. Genetics 6: 237–253. 1917.] Genetica 1: 163–164. Mar., 1919.

1230. KOOIMAN, H. N. [Rev. of: IKENO, S. **Studies on the hybrids of Capsicum annuum. II. On some variegated races.** Jour. Genetics 6: 201–229. *1 pl., 2 fig.* Apr., 1917.] Genetica 1: 176–177. Mar., 1919.

1231. KOOIMAN, H. N. [Rev. of: HERIBERT-NILSSON, N. **Eine mendelsche Erklärung der Verlustmutanten.** [*A Mendelian explanation of loss mutants.*] Ber. Deutsch. Bot. Ges. 34: 870–880. 1917.] Genetica 1: 202–203. Mar., 1919.

1232. KOOIMAN, H. N. [Rev. of: KLEBS, G. **Ueber erbliche Blütenanomalien beim Tabak.** [*Concerning hereditary floral anomalies in tobacco.*] Zeitschr. indukt. Abstamm. Vererb. 17: 53–117. 1916.] Genetica 1: 187–188. Mar., 1919.

1233. KOOIMAN, H. N. [Rev. of: PUNNETT, R. C. **Reduplication series in sweet peas. II.** Jour. Genetics 6: 185–193. 1917.] Genetica 1: 206–207. Mar., 1919.

1234. LOTSY, J. P. [Rev. of: ERNST, A. **Bastardierung als Ursache der Apogamie im Pflanzenreich; eine Hypothese zur experimentellen Vererbungs- und Abstammungslehre.** [*Hybridization as the cause of apogamy in the plant kingdom; an hypothesis for experimental evolution and genetics.*] *655 p., 173 fig.* Gustav Fischer: Jena, 1918.] Genetica 1:158–161. Mar., 1919.

1235. LOTSY, J. P. [Rev. of: JAEGER, F. M. **Lectures on the principle of symmetry and its application in all natural sciences.** *333 p., 170 fig.* Elsevier: Amsterdam, 1917.] Genetica 1: 177–179. Mar., 1919.

1236. Pascher, A. **Über die Beziehung der Reduktionsteilung zur Mendelschen Spaltung. [On the relation of the reduction division to Mendelian segregation.]** Ber. Deutsch. Bot. Ges. **36**: 163–168. 1918.

1237. Pearl, Raymond. **The seasonal distribution of swine breeding.** Sci. Monthly **19**: 244–251. Sept., 1918.—Registry records in 1913–14 of pure-bred swine breeds, Poland China and Duroc Jersey, were used to determine random date of birth by litters in four zones in U. S. Amer., northern, southern, north central, and south central. Frequency populations in month classes were then arranged based on 500 records for each breed in each zone. Average of all records show multimodal curve for date of birth with modes on March and September. Out of a total of 4000 records, 2096 were born in March and April and 477 in September and October.—*H. K. Hayes.*

1238. Péterfi, M. **Über Bastarde der Pulmonaria rubra Schott et Ky. [On hybrids of Pulmonaria rubra Schott and Ky.]** Bot. Museumshefte [Bot. Múzeumi Füzetek.] ( ) 1916 **2**: 35–41. 1918.

1239. Pomeroy, Carl S. **Bud variations in sugar cane.** Jour. Heredity **10**: 129–135. *Fig. 16–17.* Mar., 1919.

1240. Preiser, Samuel A., and Charles B. Davenport. **Multiple neurofibromatosis (von Recklinghausen's disease) and its inheritance with description of a case.** Eugenics Rec. Office Bull. **19**: 1–34. *36 fig.* Oct., 1918.—See Bot. Absts. 3, Entry 281.

1241. Punnett, R. C. **Note on the origin of a mutation in the sweet pea.** Jour. Genetics **8**: 27–31. *1 fig.* Dec., 1918.—Details history of origin of "cretin" mutant in the sweet pea. Describes chief characteristics of the mutant form and its genetic behavior. Mutant is recessive and appeared as a single plant in the F_4 generation from a cross of two white-flowered varieties. Differs from parent in a single factor and is believed to have resulted from "some radical alteration in the zygote after union between two normal gametes had already taken place,"—in other words, after fertilization.—*Orland E. White.*

1242. Pusch, G. **Inbreeding live stock.** Jour. Heredity **10**: 88–89. Feb., 1919.

1243. Rabaud, Étienne. **Évolution et sexualité. [Evolution and sexuality.]** Scientia **25**: 275–287. 1919.—See Bot. Absts. 3, Entry 660.

1244. Sirks, M. J. [Rev. of: Bernard, N. **L'Évolution des plantes. [The evolution of plants.** *514 p., 29 fig.* Felix Alcan: Paris, 1918.] Genetica **1**: 153–156. Mar., 1919.

1245. Sirks, M. J. [Rev. of: Fruwirth, C. **Handbuch der landwirtschaftlichen Pflanzenzüchtung. II. Die Züchtung von Mais, Futterrüben und anderen Rüben, Oelpflanzen und Gräsern. [Handbook of agricultural plant breeding. II. The breeding of maize, fodder beets, and other roots, oil plants and grass.** *3rd ed., 262 p., 50 fig.* P. Parey: Berlin, 1918.] Genetica **1**: 162–163. Mar., 1919.

1246. Sirks, M. J. [Rev. of: Heribert-Nilsson, N. **Naturens åndamalsenlighet och olika artbildningsteoriers ställning till denna fragen. (Doelmatigheid in de natur en het standpunt der verschillende theorieën over het ontstaan der soorten ten opzichte van dit vraagstuk.)** *48 p.* A. Bonnier: Stockholm, 1917.] Genetica **1**: 203–205. Mar., 1919.

1247. Stakman, E. C., M. N. Levine, and J. G. Leach. **New biologic forms of Puccinia graminis.** Jour. Agric. Res. **16**: 103–105. Jan. 20, 1919.—See Bot. Absts. 2, Entry 1082.

1248. STARK, MARY B. **An hereditary tumor in the fruit fly Drosophila.** Jour. Cancer Res. 3: 279–301. *1 pl., 2 fig.* July, 1918.—Lethal factor "7" in Drosophila is sex-linked in inheritance and kills 50 per cent of the males in stocks possessing it. The somatic manifestation of this factor in such animals is one or more black spots appearing in the larvae. Sections of these spots show them to be due to cellular growths somewhat resembling tumors of the higher vertebrates and having pigment both inside of and outside the cells. All larvae having tumors die between the second day and pupation. The tumors have little pigment in their early stages but become increasingly darker with age. No correlation exists between size of larva and size of tumor. Tumors may occur in any segment of body, most frequently in segments 6 and 12. Tumors were removed by operation under ether and about 5 per cent. of the operated larvae lived. None of these pupated. A control series of normal larvae gave 5 per cent. survival after operation and successful pupation in all of these. A toxic effect is exerted upon larvae injected with suspension of ground tumor cells in Locke's solution. A series of experiments with X-rays showed no visible effect upon the tumors.—*C. C. Little.*

1249. STARK, MARY B. **An hereditary tumor.** Jour. Exp. Zool. 27: 509–529. *3 pl.* Feb., 1919.—Tumor cells multiply in sterile drops of Locke's solution. Implants of living tumor into adult flies produce growths in rare cases. In these cases, death eventually results from toxic action of the tumor. Growth of tumor occurred in 2 out of 40 meal-worm larvae inoculated under absolutely aseptic conditions with bits of the tumor. Carefully controlled series of sterile cultures of egg preparations show tumor not due to infection. Excessive pigmentation of tumor is probable due to imperfect metabolism. Fifteen tumors have been observed in a single larva. Some of these may be metastases. Pieces broken from the tumor artificially inside the body, show growth. Irregularities of mitotic figures have been noted in rapidly growing tumors. All tumors have developed in embryonic rudiments destined during pupation to form adult organs.—*C. C. Little.*

1250. STARK, P. [Rev. of: LEHMANN, ERNST. **Variabilität und Blütenmorphologie. [Variability and floral morphology.]** Biol. Zentralbl. 38: 1–38. Jan., 1918.] Zeitschr. Bot. 10: 552–553. 1918.

1251. STOUT, A. B. Bud variation. Proc. Nation. Acad. Sci. 5: 130–134. Apr., 1919.—*See* Bot. Absts. 3, Entry 292.

1252. STOUT, A. B., AND HELENE M. BOAS. **Statistical studies of flower number per head in Cichorium intybus: kinds of variability, heredity, and effects of selection.** Mem. Torrey Bot. Club 17: 334–458. June 10, 1918.

1253. TISCHLER, G. **Untersuchungen über den anatomischen Bau der Staub- und Fruchtblätter bei Lythrum Salicaria, mit Beziehung auf das Illegitimitätsproblem. [Studies of the anatomical structure of the stamens and carpels in Lythrum Salicaria, with reference to the problem of illegitimacy.]** Flora 11, 12 (Festschrift Stahl): 162–192. 1918.

1254. TISCHLER, G. **Das Heterostylie-Problem. [The problem of heterostyly.]** Biol. Zentralbl. 38: 461–479. Nov., 1918.

1255. WEATHERWAX, PAUL. **The morphological basis of some experimental work with maize.** Amer. Nat. 53: 269–272. May-June, 1919.—See Bot. Absts. 3, Entry 303.

1256. WESTHIENEN, A. v. [Rev. of: STIEVE, H. **Ueber Ectrodactylie. [On ectrodactyly.]** Zeitschr. Morph. u. Anthrop. 20: 1917.] Genetica 1: 207–208. Mar., 1919.

1257. WHITE, E. A. **Methods of rose-breeding.** Amer. Rose Ann. 1918: 51–55. *7 fig.* 1918.—See Bot. Absts. 3, Entry 304.

1258. Whiting, P. W. **Two striking color variations in the green frog.** Jour. Heredity, 10: 127-128. Mar., 1919.

1259. Wicks, W. H. **The effect of cross-pollination in size, color, shape and quality of the apple.** Monthly Bull. State Comm. Hortic. California 7: 568-573. Oct., 1918.

HORTICULTURE

J. H. Gourley, *Editor*

GENERAL

1260. Barnes, Will C. **Pruning for profit. Are you raising fruit or wood?** Amer. Forestry 25: 798-800. *2 fig.* 1919.—About orange groves; popular.—*Chas. H. Otis.*

1261. Bean, W. J. **Deutzia compacta.** Curtis Bot. Mag. 15: *Pl. 8795 (colored).* 1919.

1262. Beckwith, Charles S. **Report on cranberry investigations for the season of 1918.** Proc. Ann. Meet. 49: 3-15. Amer. Cranberry Growers' Assoc. *Pl. 1-6.* 1919.—This is a report of work carried on at the New Jersey Cranberry Substation. Nitrogen from nitrate of soda gave immediate and large increase of yield when applied on Savannah bottoms over a period of six years. Nitrogen from dried blood and cotton seed meal gave slower increases, while ammonium sulfate was unsatisfactory. Phosphoric acid from acid phosphate and phosphate rock gave good increases while that derived from basic slag and steamed bone gave only small increases. Potash from muriate and kainit gave poor results, while that from sulfate of potash gave only a low increase.—On mud bottoms nitrogen from all sources gave poor results. Phosphoric acid from acid phosphate, phosphate rock and steamed bone gave fair to good results, while that from basic slag was unsatisfactory. Results from potash from all sources were poor or doubtful.—On iron ore bottoms nitrogen gave poor and in some cases disastrous results, while phosphoric acid from phosphate rock gave somewhat more favorable results.—Tests of mixed fertilizers indicate that certain forms are beneficial on Savannah bottoms while on mud and iron ore bottoms, results were inconclusive.—It was found that sodium cyanide dissolved in water was fairly effective in killing the girdle worm [Crambus hortuellus, Hbn (?)].—*J. K. Shaw.*

1263. Buswell, W. M. **The roselle.** Amer. Bot. 25: 14. *1 fig.* 1919.—The roselle (*Hibiscus sabdariffa*) reported as being sold under the name of Florida cranberries.—*W.N. Clute.*

1264. Coit, J. Eliot, and Robert W. Hodgson. **An investigation of the abnormal shedding of young fruits of the Washington navel orange.** Univ. California Publ. Agric. Sci. 3: 283-368. *Pl. 25-42, fig. 1-9.* 1919.—Experiments conducted near Bakersfield, California, to determine the cause of the summer drop of immature fruits of the navel orange. The district is semiarid and trees are artificially irrigated with water from wells. The trees annually suffer a heavy loss of small immature fruits.—Abscission of larger fruits is believed to be due to infection with *Alternaria citri*, E. and P., which enters through the scars left by the fall of the pistils. The hypothesis is advanced that excessive transpiration from the leaves causes water, together with the enzymatic solutions secreted by the fungus in the "navel end" of the orange to be drawn back through the vascular system of the young fruits through the pedicel and to afford the stimulus to abscission. The fungus is reported to cause a black rot of large and mature oranges.—The major part of the abscission of small fruits in the first weeks of their growth is believed to be due to a succession of daily water deficits in the young fruits due to the high temperature and low water content of the atmosphere. Readings of a porous clay atmometer bulb showed a very high rate of water loss. Observations in a grove bearing a companion crop of alfalfa showed that the rate of water

loss there was markedly reduced and that the trees yielded larger crops of fruit.—The authors believe that the shedding of young fruits may be overcome by such practices as, heavier and more frequent irrigation, the planting of summer intercrops, mulching with straw, protection by means of windbreaks, and moderate winter pruning.—*H. S. Reed.*

1265. McCLELLAND, T. B. **Influence of foreign pollen on the development of vanilla fruits.** Jour. Agric. Res. 16: 245–251. *Pl. 31–35.* 1919.—Attempts have been made to establish vanilla growing on a commercial scale in Porto Rico. Two types of plant are of economic value: *Vanilla planifolia* and *Vanilla* spp. The former is a plant having small, pale green blossoms, developing a long slender capsule tapering at the stem end but carrying its fullness well down towards the blossom end. It is of high quality. The latter type represents a group of varieties or species known as "vanillon" which agree in having large, yellow blossoms, fruits which are much thicker and shorter than those of *V. planifolia*, being of a more uniform thickness throughout.—When reciprocal crosses are made, a decided modification in the form of the fruit has resulted. It is usually so marked that these fruits can be distinguished from close fertilized fruits at a glance. Average relative girth measurements at stem-end and at blossom-end of *V. planifolia* selfed are 21.8 and 26.7 respectively and when fertilized with pollen from vanillon, 27.7 and 22.2. Similar measurements for vanillon selfed are 39.4 and 39.2 and of vanillon fertilized with pollen from *V. planifolia* 32.7 and 42. These alterations are due to the difference in location of the ovules fertilized by the two kinds of pollen and a possible explanation of this is to be found in the relative proportions of the essential parts in the two flowers. At blossoming time, the ovaries are of about the same length but the style in the vanillon flower is much longer (up to 70 per cent.) than that of *V. planifolia*. But it is necessary to assume that there must be a certain maturity of development of the pollen tube before the ovule can be fertilized. —*D. Reddick.*

1266. MEEKING, ERNEST. **Standardized packing and grading of fruit.** Jour. Dept. Agric. Victoria 16: 741–746. *Pl. 5–7.* 1918.—A continuation of an earlier article (*ibid.* 16: 317) describing shipping cases for fruit and discussing the Fruit Case Act, which came into force in 1906.—*J. J. Skinner.*

1267. ROLFE, R. A. **Bulbophyllum robustum.** Curtis Bot. Mag. 15: *Pl. 8792* (*colored*). 1919.

1268. ROLFE, R. A. **Govenia lagenophora.** Curtis Bot. Mag. 15: *Pl. 8794* (*colored*). 1919.

1269. ROLFE, R. A. **Isabella virginalis.** Curtis Bot. Mag. 15: *Pl. 8787* (*colored*). 1919.

PRODUCTS

1270. JOHNS, CARL O., A. J. FINKS, AND C. E. F. GERSDORFF. **Globulins of the cocoanut, Cocos nucifera. I. Preparation of cocoanut globulin. Distribution of the basic nitrogen in cocoanut globulin.** Jour. Biol. Chem. 37: 149–153. 1919.—See Bot. Absts. 2, Entry 147.

1271. JOHNS, CARL O., A. J. FINKS, AND MABEL S. PAUL. **Studies in nutrition. I. The nutritive value of cocoanut globulin and cocoanut press cake.** Jour. Biol. Chem. 37: 497–502. 1919.—The globulin of the cocoanut produces normal growth when used as the sole source of protein in an otherwise complete diet. Cocoanut press cake contains sufficient water-soluble vitamine and some fat-soluble vitamine, but the rate of growth is increased by adding butter fat to the diet.—*George B. Rigg.*

MORPHOLOGY AND TAXONOMY OF ALGAE

J. R. SCHRAMM, *Editor*

1272. ANONYMOUS. **Kelp potash production.** Pacific Fisherman 17: 64. 1919. Note on amount produced.—*T. C. Frye.*

1273. CHURCH, A. H. **The phaeophycean zoid.** Jour. Bot. 57 (Suppl. II.): 1-7. 1919.—The motile cells in Phaeophyceae, viewed as retained flagellate phases in the life history of brown algae, are discussed in the light of older and more recent investigations. The point of insertion of the lateral cilia is regarded as the original "pole" of the zoid, the direction of the movement, however, implying that a change of polarity of about 90° has taken place from the original isokont condition with equal and distally inserted flagella. This change is believed to be correlated with a differentiation in function between the two flagella, one becoming a propeller and the other remaining a tractor, the two attaining a divergence of 180° in a direction at right angles to the original axis of polarity; in this way, the new "anterior" end is acquired. The term "anisokont" is suggested for the condition obtaining in the phaeophycean zoid with unequal and "laterally inserted" flagella. The author states that the older view that the flagella are formed from a peripheral zone of cytoplasm must be replaced by the view that they originate as outgrowths from a basal granule, as in many flagellates. The flagella are discussed as regards movements, length in relation to body of zoid, function as tactile sensitive organs, etc. Rate and duration of movement of zoid are also discussed as well as metabolic and ameboid movements of the zoid body. Considerable space is devoted to the modification of the zoid in consequence of the development of heterogamy and to its variation in different phyla of brown algae. The author considers that the flagella originally served to provide a means of vertical ascent, and not of lateral movement, for autotrophic pelagic phytoplankton organisms; in the Phaeophyceae, on the other hand, this inherited mechanism serves to bring gametes into proximity, although in forms living in violently agitated waters the flagella are of little value in this respect and are reduced (Dictyotaceae), as they have been with complete loss in the red algae. In quiet waters, the cilia are regarded as the only means of sexual approximation and as such may prove increasingly useful and tend to become exaggerated.—*J. R. Schramm.*

1274. GROVES, J., AND G. R. BULLOCK-WEBSTER. **New variety of Nitella flexilis.** Jour. Bot. 57: 101-102. 1919.—*N. flexilis* var. *Fryeri* is described as new, from Cambridgeshire, West Norfolk, and in Huntingdonshire. It resembles *N. opaca.*—*K. M. Wiegand.*

1275. MIRANDE, MARCEL. **Sur le chondriome, les chloroplastes et les corpuscules nucléolaires du protoplasme des Chara.** [**Concerning the chondriosome, chloroplasts, and nucleolar corpuscles in Chara.**] Compt. Rend. Acad. Sci. Paris 168: 283-286. *Fig. 1-7.* 1919.—Two species of *Chara*, *C. foetida* and *C. hispida*, were studied. Chondriosomes were found in all cells except those of the spermatogenous tissue of the antheridia.—The chloroplasts are located in the immobile layer of cytoplasm at the periphery of the cells. They appear in the initial cells as a mass of granules around the nucleus and at this stage have staining qualities similar to nucleoles. Author finds these granules to be identical with those observed by Kaiser (1896), Debski (1897, 1898), and Strasburger (1908). These granules were identified by Debski as being identical with the extra-nuclear nucleoles of Zimmermann (1896).—The granules soon migrate to the peripheral layer and enlarge, fragment, and turn green. In the cells of *Chara* are found granules staining like nucleoles which the author believes are nucleolar in nature and which appear to have been extruded from the nuclei.—*V. H. Young.*

1276. TRANSEAU, E. N., AND HANFORD TIFFANY. **New Oedogoniaceae.** Ohio Jour. Sci. 19: 240-243. *Pl. 14.* 1919.—Descriptions are given of the following undescribed forms: *Oedogonium hystricinum* and *O. Pisanum gracilis* from Illinois; and *Bulbochaete Bullardi* from Massachusetts.—*H. D. Hooker, Jr.*

1277. TURRENTINE, J. W. **Progress of the kelp potash industry.** Pacific Fisherman Year Book **1919**: 111. 1919.—See Bot. Absts. 2. Entry 134.

1278. VANGOOR, A. C. J. **Zur Kenntnis der Oscillatoriaceen.** [**On Oscillatoriaceae.**] Recueil Trav. Bot. Néerland. **15**: 255-262. *Pl. 2.* 1918.—The following new species are described from Holland: *Oscillatoria guttulata, O. amphigranulata, O. Redekei, O. Annae,* and *Lyngbya amplivaginata.* All the species are illustrated. In *Oscillatoria guttulata* many pseudovacuoles (the gas vacuoles of Klebahn) occur, which the author regards, with Molisch, as protoplasmic in nature; since the species is probably not a true plankton form, the author emphasizes that it presents another case contrary to the assertion of Klebahn that pseudovacuoles occur only in floating blue green algae.—*J. R. Schramm.*

MORPHOLOGY AND TAXONOMY OF BRYOPHYTES

ALEXANDER W. EVANS, *Editor*

1279. FLORIN, R. **Cytologische Bryophytenstudien. I. Über Sporenbildung bei Chiloscyphus polyanthus (L.) Corda.** [**Spore-formation in Chiloscyphus polyanthus.**] Ark. för Bot. **15**[6]: 1-10. *Pl. 1, fig. 1-3.* 1918.—The heterotypic division is here described for the first time in one of the acrogynous Jungermanniales. No evidence of a quadripolar spindle could be found, the division proceeding in the usual way. Before the first stages make their appearance the spore mother cell already shows the lobate form, characteristic of so many Hepaticae, and the nucleus also appears more or less distinctly angular. The stages shown most clearly are the strepsinema, the diakinesis and the metaphase, the number of double chromosomes present being apparently ten. The homotypic division was not studied, but the fact was demonstrated that the formation of cell walls is delayed until both divisions have been completed.—*A. W. Evans.*

1280. FLORIN, R. **Das Archegonium der Riccardia pinguis** (L.) B. Gr. Svensk. Bot. Tidsk. **12**: 464-470. *Fig. 1-4.* 1918.—In the first part of the paper several abnormal archegonia are described. In one of these the usual canal cells and egg are replaced by a row of egg-like cells with large nuclei and dense cytoplasm; in another two rows of canal cells are present; in a third the ventral canal cell shows two nuclei but no dividing wall; and in a fourth four nuclei are present in the egg cell. In the second part of the paper centrosome-like bodies are demonstrated in the egg cell. These are situated on opposite sides of the nucleus and from each one numerous rays extend almost to the periphery of the egg.—*A. W. Evans.*

PATHOLOGY

DONALD REDDICK, *Editor*

1281. ANONYMOUS. **Smut in oats and barley.** Jour. Bd. Agric. [London] **24**: 1417-1419. 1918. *Issued also as Food Production Leaflet* 31.—Brief descriptions of the smuts with directions or control.—*D. Reddick.*

1282. ANONYMOUS. **Parsnip disease and its prevention** Jour. Bd. Agric [London] **24**: 1123. 1918.—Apparently a brief of COTTON, A. D. **Diseases of parsnips.** [See Bot. Absts. 1, Entry 1664.]

1283. BEACH, WALTER SPURGEON. **Biologic specialization in the genus Septoria.** Amer. Jour. Bot. **6**: 1-33. *Pl. 1, 18 diagrams, 4 tables, 1 graph.* 1919.—Author briefly reviews the literature dealing with biologic specialization. 16 species of *Septoria* were studied as to their host relations. Most species do not have a broad range of hosts, but are limited to one or a few closely related species, usually belonging to the same genus. In many cases the host ranges were found to be narrower than those recorded in the host indices. Certain

species evidently are differentiated into biologic forms, since forms morphologically similar will not infect the same hosts. The disease characters of the host vary with the species, age and part of the host attacked, and with environmental conditions, and therefore are unreliable in taxonomy. Morphological characters in certain species of *Septoria*, particularly spore length, vary considerably under different environmental conditions and the taxonomic importance of such characters is therefore doubtful. Inoculation experiments showed that *S. malvicola* E. & M. and *S. fairmani* E. & E. are identical. The form of *S. convolvuli* upon *Convolvulus arvensis* is biologically as well as morphologically distinct from the type form of *S. convolvuli* described upon *C. sepium*, and is here proposed as a new species, *S. septulata*.—*E. W. Sinnott.*

1284. Coit, J. Eliot, and Robert W. Hodgson. **An investigation of the abnormal shedding of young fruits of the Washington navel orange.** Univ. California Publ. Agric. Sci. 3: 283-368. *Pl. 35-42, fig. 1-9.* 1919.—See Bot. Absts. 2, Entry 1264.

1285. Cook, Mel. T. **Potato spraying experiments in 1917.** New Jersey Agric. Exp. Sta. Rept. 1917: 561-563. 1918.—This paper is a record of spraying tests in three localities in the state in 1917. [See Bot. Absts. 2, Entries 504, 505.]—*M. T. Cook.*

1286. Darnell-Smith, G. P. **Fungous diseases of maize.** Dept. Agric. New South Wales Farmers' Bull. 116: 33-37. 1918.—The following diseases and the causal organisms are described briefly: ear rot (*Diplodia zeae*), American maize smut (*Ustilago zeae*), head smut (*Sorosporium reilianum*), rust (*Puccinia maydis*), leaf stripe (*Helminthosporium turcicum*).—*D. Reddick.*

1287. Dudley, F. H. **A few insects and diseases common to small fruits.** Maine Dept. Agric. Bull. 17[2]: 22-27. 1918.

1288. Faulwetter, R. C. **The angular leaf spot of cotton.** South Carolina Agric. Exp. Sta. Bull. 198. *41 p., Pl. 1-6, charts 1-5.* 1919.—The disease, caused by *Bacterium malvacearum*, first appears as dark green angular spots on the under surface of the leaves. These later appear upon the upper surface and become reddish brown. The spots are bounded by the larger veins thus giving them their angular form. The seasonal history is divided into two phases, (1) the primary infections upon the cotyledons and (2) the secondary infections upon the foliage, leaves, stems, bracts and bolls. Of the factors concerned in the hibernation of the organism, the contamination of short lint or fuzz upon the seed plays a most important part. The amount of injury caused by this disease has not been fully determined, varying in different portions of the country. Wind during rain was found to be an important agent of dissemination.—Sterilization of the seed coat by the use of sulphuric acid and mercuric chlorid was found to be the most efficient means of control.—*D. B. Rosenkrans.*

1289. Federal Horticultural Board, U. S. Dept. Agric. **Banana plant quarantine (foreign).** Service and Regulatory Announcements 50: 33. 1918.—Exclusion of all varieties of banana plants (*Musa* spp.) or portions thereof from introduction into U. S. A. from the following countries: Jamaica, Trinidad, Dominica, Martinique, Guadeloupe, Barbados, Brazil, Philippine Islands, Fiji Islands, Sumatra, Java, Madagascar, Queensland, India, North Borneo, and British New Guinea.—Cause, root borer (*Cosmopolites sordidus*).—*D. Reddick.*

1290. Federal Horticultural Board, U. S. Dept. Agric. **Banana plant quarantine (domestic).** Service and Regulatory Announcements 50: 34. 1918.—Exclusion of all varieties of banana (*Musa* spp.) or parts thereof from the territories of Hawaii and Porto Rico. Cause, the weevils known as *Rhabdocenemis obscurus* and *Metamasius hemipterus*.—*D. Reddick.*

1291. Federal Horticultural Board, U. S. Dept. Agric. **Notice of quarantine No. 34—Bamboo quarantine.** Service and Regulatory Announcements 55: 82. 1918.—Movement of

living seeds, plants or cuttings of all genera and species of the tribe Bambuseae into U. S. A. from all countries is prohibited. Cause, bamboo smut (*Ustilago shiraiana*) and other dangerous plant disease.—*D. Reddick.*

1292. FEDERAL HORTICULTURAL BOARD, U. S. DEPT. AGRIC. **Potato wart in the United States.** Service and Regulatory Announcements 56: 90-91. 1918.—Potato wart (*Chrysophlyctis*) has been found in 26 mining towns of Pennsylvania. It was probably introduced on diseased stock imported in 1912. It has not been found in commercial potato-growing districts.—*D. Reddick.*

1293. FEDERAL HORTICULTURAL BOARD, U. S. DEPT. AGRIC. **Quarantine on account of Japanese beetle.** Service and Regulatory Announcements 56: 91-92. 1918.—Sweet corn (*Zea*) from certain townships in the state of New Jersey is prohibited from interstate shipment in the United States, except after inspection and certification. Cause, Japanese beetle (*Popillia japonica*).—*D. Reddick.*

1294. FEDERAL HORTICULTURAL BOARD, U. S. DEPT. AGRIC. Service and Regulatory Announcements 60: 17-27. 1919.—Notes on the following: Necessity of disinfection of railway cars which have been used for conveyance of fresh plant material; ballast [ship] as a possible means of introducing noxious insects and plants; memorandum concerning quarantine No. 37, restricting the importation of nursery stock and other plants and seeds after June 1, 1919, including a history of the steps leading up to the promulgation of the order and an account of the conditions which prompted it; notices of proposed hearings.—D. *Reddick.*

1295. FEDERAL HORTICULTURAL BOARD, U. S. DEPT. AGRIC. Rept. Fed. Hortic. Bd. 1918, *19 p.* Washington, 1918.—Review of the activities of the board for the fiscal year. Data on importation and distribution of cotton, and nursery stock in U. S. A. List of current quarantines and other restrictive orders.—*D. Reddick.*

1296. HODGSON, C. M. **Spiked sandal wood.** Indian Forester 44: 66-71. 1918.—Referring only to the North Coimbatore Forest Division, author states: "I write to record my opinion that spike is not caused by fire, *Zizyphus*, lantana [*L. camara*] or any other feature of the environment but is an internal ailment due to some germ" or is a physiological peculiarity. Reasons for this belief are stated in some detail.—Observations on various ecological factors which were thought might have a bearing on the occurrence of the disease but none of which seems to have. [See also Bot. Abstr. 2, Entries 1177, 1297, 1298, 1301, 1304 and 1307.]—*D. Reddick.*

1297. HOLE, R. S. **Spike disease of sandal.** Indian For. 44: 461-462. 1918.—Brief criticism of article by LUSHINGTON (Indian For. 44: 439. See Bot. Abstr. 2, Entry 1177) and defense of author's position with respect to cause of spike disease, namely, that autogenetic origin of the disease is only a theory and not a "dictum." [See Bot. Abstr. 2, Entries 1296, 1298, 1303, 1304 and 1307.]—*D. Reddick.*

1298. HOLE, R. S. **Spike disease of sandal.** Indian For. 44: 325-334. *Pl. 20-21.* 1918.—Rev. of article by VENKATARAMA AYYAR, Indian For. 44: 316-324, and defense of authors previous position, Indian For. 43: 430.—Spike disease probably was present long before 1898 but was brought prominently to notice at that time. *Zizyphus oenoplia* is found to be generally affected with a spike disease but its occurrence only lately has come to notice.—Isolation experiments by trenching should be allowed to continue for a longer period and finally it should be ascertained that roots of host plants have been excluded from the isolation areas.—Injury by fire was thought to be a factor only under dry, stony conditions.—Additional arguments based on observations are presented in favor of the theory of autogenetic origin of spike. [See Bot. Abstr. 2, Entries 1177, 1296, 1297, 1303, 1304 and 1307.]—*D. Reddick.*

1299. Lemée, E. **La rouille des poiriers (Roestelia cancellata) et le genévrier sabine. [The rust of pears and Juniperus sabina.]** Bull. Soc. Path. Vég. France **4**: 96–97. 1918.—Instances are cited in which severe attacks of pear rust have been found in the neighborhood of Junipers and have been prevented by the removal of the Junipers. A plea is made for the compulsory destruction of this host in pear growing sections.—*C. L. Shear.*

1300. Lees, A. H. **Reversion of black currants.** Ann. Rept. Agric. and Hortic. Res. Sta. Univ. Bristol **1917**: 33–34. [1918].—See Bot. Absts. **2**, Entry 1074, of which this is said to be a brief.—*D. Reddick.*

1301. Lint, H. Clay. **Report of potato spraying experiments.** New Jersey Agric. Exp. Sta. Rept. **1916**: 604–617. 1918.—Seven different treatments were used in four localities in the state and the results recorded with discussion.—*M. T. Cook.*

1302. Lint, H. Clay. **Report of the sulfur potato scab experiment for 1916.** New Jersey Agric. Exp. Sta. Rept. **1916**: 618–625. 1918.—This work was carried on in six localities in the state and was for the purpose of determining the value of sulfur as a soil treatment in the control of the potato scab organism (*Actinomyces chromogenus*).—*M. T. Cook.*

1303. Lushington, P. M. **Progress of spike investigation in the southern circle, Madras Presidency, during 1917–18.**—Indian Forester **44**: 439–460. *2 folded charts.* 1918.—Résumé of work by author (Indian Forester **44**: 114) and by Venkatarama Ayyar, (Indian Forester **44**: 316) with extensions and additions.—Investigations to date do not support the theory of unbalanced circulation of sap. Means of spread of the disease is not known but author believes evidence points to transmission of infection by means of such hosts as *Zizyphus oenoplia, Dodonaea viscosa, Argyreia cuneata, Cipadessa fruticosa,* rather than by birds, flying foxes, insects, red spider, etc. Seed seems to be free from disease.—In some localities the disease spreads from tree to tree, and progresses more rapidly in individual trees, than in other localities.—The disease may manifest itself every month of the year except August but the period March to July is most favorable for its appearance. It does not progress regularly from branch to branch. Its appearance is readily detected but there is no way of determining when the tree became infected. Meagre data indicate that the incubation period may be 19 months.—It is not possible to state that the preventive measures adopted have been of any use. [See Bot. Absts. 2, Entries 1177, 1296, 1297, 1298, 1304 and 1307.]—*D. Reddick.*

1304. Lushington, P. M. **Spike disease in sandal. An interesting isolated area and its treatment.** Indian Forester **44**: 114–117. 1918.—An area of 11 acres on the top of the Javadis, elevation 2800 feet, contained 65 diseased trees "one season old." This is 100 miles from any other known cases of the disease.—In October 1917 all sandal within the area and in a belt about one furlong in width was removed whether spiked or not, as were also the following plants, all of them subject to a spike-like disease: *Zizyphus oenoplia, Dodonaea viscosa, Scutia indica* and *Cipadessa fruticosa.* [See Bot. Absts. 2, Entries 1177, 1296, 1297, 1298, 1303 and 1307.]—*D. Reddick.*

1305. McMurran, S. M. **Pecan rosette in relation to soil deficiencies.** U. S. Dept. Agric. Bull. 756. *11 p., 4 fig.* Washington, 1919.—Rosette is one of the most serious diseases of pecan in southeastern United States. Losses are incurred through reduced growth and decreased nut production. The disease, at first, is characterized by small, wrinkled, yellow-mottled leaves at the ends of branches; finally the tree dies back. There is also a shortening of internodes, and a forcing of dormant buds.—Empirical data indicated that a deficiency in humus, fertility and moisture supply has a causal connection with rosette. The present experimental work, conducted for the purpose of testing this view, extended over two years and involved the application of stable manure alone, cottonseed meal, alone, and combined with stable manure, and lime; check plats received no fertilizer. The first three fertilizers were very beneficial in restoring trees to a normal condition of growth, appearance

and nut-production. Lime on the other hand failed to improve the rosetted trees; in fact they grew worse.—Injury to feeding roots by plowing apparently aggravates the disease.—Control suggestions are along the line of soil improvement. Develop deeper surface soils between rows of trees by use of cover crops, by plowing deeper year after year until 8 or 10 inches of fertile soil is established. New cuttings should not be made on deep sand, clays underlain by sand, or on eroded hillsides. The soil type selected should approach as nearly as possible that in which the pecan grows in its natural habitat. The beneficial results with manure and cottonseed meal, alone or combined, highly commend the use of such fertilizers for rosette. Many orchards have been planted on unsuitable soils; in such cases the author advises building up such soils rather than replanting in a new location. [See Bot. Abstr. 2, Entry 1146.]—*L. R. Hesler.*

1306. POOLE, R. F. **Report of celery investigations.** New Jersey Agric. Exp. Sta. Rept. 1917: 536-539. 1918.—A continuation of the work carried on by W. S. Krout in 1916 and is primarily a record of the influence of a number of chemicals used for the control of pathogenic soil organisms (*Bacterium sp.* causing crown rot, *Sclerotinia libertiana* causing stem rot and nematodes).—*M. T. Cook.*

1307. RAO, RAMA. **Field investigations of spike disease in sandal on the Kollimalai hills.** Indian Forester **44**: 58-65. 1918.—Spike disease was found in the hills 80 miles from previously known diseased plants, the two cases found being 8 miles apart. Detailed observations on the ecological conditions under which the disease was found and which allow of no definite conclusion, and a minute description of the appearance and condition of the diseased trees.—Author is skeptical of the contagious or infectious nature of the disease.—A list of 57 hosts of sandal tree on the Kollimalais is appended. [See Bot. Abstr. 2, Entries 1177, 1296, 1297, 1298, 1303 and 1304.]—*D. Reddick.*

1308. REINKING, OTTO A. **Philippine economic-plant diseases.** Philippine Jour. Sci. A, 13: 165-274. *43 fig., 22 pl.* 1918.—This paper describes the most important diseases found upon economic plants in Laguna and near provinces in Luzon, Philippine Islands; 339 diseases of 61 hosts are described. The hosts are arranged alphabetically, and diseases are described under each host. The description of each disease includes three topics: symptoms, causal organism, and control. Many of the diseases are described for the first time, only the fungi having been identified previously. Particularly important work was done with the following: *Phyllachora sorghi, Sclerotium, Rhizopus artocarpi, Pseudomonas citri,* Rhizoctonia, coconut bud-rot, *Hemileia vastatrix, Phytophthora colocasiae, Phytophthora nicotianae, Pythium debaryanum, Woroninella psophocarpi, Cercospora* sp. (on sugar cane), *Phytophthora faberi, Helminthosporium inconspicuum,* and *Sclerospora maydis.* A special section of the paper deals with the control of plant diseases; in this section are discussed plant sanitation, crop rotation, cultural methods, disease-resistant varieties, soil sterilization, and fungicides.—*S. F. Trelease.*

1309. SALMON, E. S., AND H. WORMALD. **An experiment in the treatment of covered smut of barley.** Jour. Bd. Agric. [London] 24: 1388-1394. *2 fig.* 1918.—The covered smut (*Ustilago hordei*) and loose smut (*U. nuda*) are briefly described. The presence of covered smut results in a depreciation of the grain due to the fact that maltsters claim to be unable to make pale ale from barley having much smut in it.—Experiments to control covered smut show that formalin dip is effective, sprinkling with copper sulfate (2.5 per cent solution) less effective, sprinkling with bordeaux mixture of little value and sweating on a malt kiln at 100°F. for 24 to 30 hours valueless.—*D. Reddick.*

1310. SHEAR, C. L. **Pathological problems in the distribution of perishable plant products.** —Mem. Brooklyn Bot. Gard. 1: 415-422. *Pl. 9-11.* 1918.—Examples are drawn from various sources to show the necessity for investigating the causes of and means of preventing deterioration and decay of plant products in transit, storage, and on the market.—The physiological behavior of decay-producing organisms, particularly with respect to temperature, humidity, etc., has an important bearing on determining responsibility for losses.—*D. Reddick.*

1311. Smith, Erwin F. **The relation of crown-gall to other overgrowths in plants.** Mem. Brooklyn Bot. Gard. 1: 448–453. 1918.—Outline of a lecture which is summed up by the author as follows: "My own belief is that all overgrowths are correlated phenomena, are the response of the organism to essentially similar (but not necessarily identical) stimuli, the visible difference in response when brought about by parasites being due to number and location of the parasites, age and kind of tissues invaded, and volume, direction, and velocity of the stimulus exerted. In other words, in every case, I think the stimulus is primarily a physical stimulus due to changed osmotic pressures rather than a direct chemical stimulus. Overgrowths, therefore, do not always involve the presence of a parasite although as observed in nature parasites are probably responsible for most of them."—*D. Reddick.*

1312. Stevens, Neil E., and R. B. Wilcox. **Further studies of the rots of strawberry fruits.** U. S. Dept. Agric. Bull. 686. *15 p. Tables 1–8.* 1918.—The studies were made in the field, en route and in markets. Two types of rot are discussed: rhizopus rot (caused by *Rhizopus nigricans*) and botrytis rot (caused by *Botrytis* sp., probably *B. cinerea*). The former, known as leak, is the most important fruit rot found on growing ripe strawberries. The latter is a field rot, being most serious under excessively moist conditions. Control of leak is closely connected with handling methods. Of prime importance is the avoidance of injury to the epidermis. Berries should be picked in the cool of the morning, packed before rather than after washing, and placed at a low temperature. Rhizopus grows very slowly at 10°. A practical hint in this connection is found in the fact that the greater amount of rot occurs when the longer time is consumed in reaching 10°C.; it is important that this temperature be reached as quickly as possible. Botrytis-decayed berries should not be packed with fruit intended for market. It is found that *Rhizopus* rarely ever follows *Botrytis*.—*L. R. Hesler.*

PHYSIOLOGY

B. M. Duggar, *Editor*

DIFFUSION, PERMEABILITY

1313. Hurd, Annie May. **The relation between the osmotic pressure of Nereocystis and the salinity of the water.** Publ. Puget Sound Biol. Sta. 2: 183–193. 1919.—As the water in which *Nereocystis* is grown is decreased in salinity the plant loses salts and takes in water, but maintains an average osmotic surplus of 3.62 atmospheres. In normal Puget Sound water with osmotic pressure of 19.2 atmospheres *Nereocystis* has an osmotic pressure of 22.72 atmospheres. The pressure within the plant was slowly lowered to 12.52 atmospheres without resulting in death, by reducing the water to 17/28 fresh. The plant can endure 100 per cent fresh water if the reduction of salt is gradual enough for the pressure within the cells to adjust itself to that outside, but not if the change is sudden.—*T. C. Frye.*

1314. Osterhout, W. J. V. **Decrease of permeability and antagonistic effect caused by bile salts.** Jour. Gen. Physiol. 1: 405–408, 1919.—The author finds that sodium taurocholate is able to produce a decrease in permeability and to antagonize NaCl; also, that antagonistic relations can be predicted by finding the effect on permeability of each substance by itself, inasmuch as substances which decrease permeability antagonize those which increase it.—*J. M. Brannon.*

1315. Schryver, S. B., and N. E. Spear. **Investigations dealing with the state of aggregation. Part IV.—The flocculation of colloids by salts containing univalent organic ions.** Proc. Roy. Soc. London **B, 90**: 400–414. 1919.—With certain exceptions, in cases tested, no general relationship was found between the surface tensions of normal solutions and the capacity of salts to flocculate colloids.—*P. B. Sears.*

1316. MAZE, P. **Recherche d' une solution purement minérale capable d' assurer l'evolution complète du mais cultivé à l'abai des microbes. [Investigation of a purely mineral solution capable of insuring the complete development of cultivated maize protected from microbes.]** Ann. Inst. Pasteur 33: 139–173. *Fig. 1–8.* 1919.—The influence of dilute solutions of aluminium, boron, iodin, fluorin and arsenic, in the form of salts, upon the development of maize was studied by growing the plants in a pure mineral salt solution. The latter contained nitrogen, phosphorus, potassium, sulphur, calcium, magnesium, iron, silicon, zinc, manganese and sodium ($NaNO_3$, KH_4PO_4 and K_2HPO_4, $MgSO_4$, $CaCO_3$, $FeSO_4$, K_2SiO_3, $ZnCl_2$, and $MnCl_2$). Minimum quantities of boron, aluminium, fluorin, and iodin were found to be indispensable to the growth of maize, the degree of usefulness being in the order named. Arsenic was found to be of no value.—Similar studies were made of the effect of different organic salts and humus compounds when added to the above pure mineral salt solution. In the early period of growth, these appeared to exert some influence, whereas at the end of the experiment no appreciable effect could be noted. Further experiments were carried on to determine the influence of aeration and the state of oxidation of the iron compounds upon the progress of growth.—*Walter G. Sackett.*

METABOLISM (NITROGEN RELATIONS)

1317. BONAZZI, AUGUSTO. **On nitrification. II. Intensive nitrite formation in solution.** Jour. Bact. 4: 43–60. *Pl. 1, fig. 1–2.* 1919.—By the use of Fernbach flasks having a surface bottom of approximately 300 square centimeters, adjusted to a slowly revolving klinostat placed at an angle of about 5 degrees from the vertical, a very luxuriant growth of nitrite-forming bacteria was produced in the Omelianski solution. The growth of these organisms is reported by the author to be far in excess of any yet recorded for equal periods of time in solution cultures. Better aeration and a change of local environment by removal of by-products, or of better access of mineral nutrients, are suggested as the factors contributing to intensive nitrification.—*Chester A. Darling.*

1318. BREWSTER, J. F., AND C. L. ALSBERG. **Determination of the distribution of nitrogen in certain seeds.** Jour. Biol. Chem. 37: 367–371. 1919.—Analyses of cottonseed flour, tomato seed (pressed), cow pea (*Vigna sinensis*), jack bean (*Canavalia ensiformis*), corn (*Zea mays*), corn germ (pressed), wheat, Kafir corn (*Andropogon sorghum*) and kafarin were made by the Van Slyke method to determine the amount of nitrogen present in various forms (amido N, humin N, arginine N, histidine N, cystine N, lycine N, and amino N). The results agree in general with those obtained by other workers. Determinations of the nitrogen distribution in the nucleic acid of yeast were also made. Fifteen per cent. of the total nitrogen of the acid appears in the arginine fractions, although the nucleic acid contains no arginine. Erroneous results may be obtained by using the Van Slyke method on materials containing nucleic acid.—*George B. Rigg.*

1319. TEMPLE, J. C. **The value of ammonification tests.** Georgia Agric. Exp. Sta. Bull. 126. *18 p.* 1919.

GROWTH, DEVELOPMENT, REPRODUCTION

1320. BOSE, J. C., AND G. DAS. **Researches on growth and movement in plants by means of the high magnification crescrograph.** Proc. Roy. Soc. London B, 90: 364–400. *Fig. 1–17.* 1919.—Author describes a self-recording growth-meter with maximum magnification of growth-changes up to 10,000.—By means of delicate experiments of short duration exact reactions of plants to various stimuli were ascertained. Growth and nastic and tropic (including pulvinal) reactions were shown to have a definite homologous basis. The direct application of a stimulus induces contraction; while indirect application, i.e., upon a region distant from the point of response, gives rise to expansion. Unilateral stimulation causes positive curvature by contraction of the proximal side (direct effect) and expansion of distal side (indirect effect), e.g., in a growing stem. Transverse conduction of excitation induces

contraction of the opposite side, neutralizing or reversing the positive responsive curvature; that is, if the stimulus be strong enough it travels through protoplasm to a region where the indirect effect has already appeared, neutralizing the latter by establishing a direct, or contractive, effect. Cases of differential excitability in two halves of anisotropic organs were considered.—*P. B. Sears.*

TEMPERATURE RELATIONS

1321. Burgess, James L. **Relation of varying degrees of heat to the viability of seeds.** Jour. Amer. Soc. Agron. 11: 118–120. 1919.—In an investigation of means of destroying insect pests in stored seed, it was found that a temperature of 140° to 158° F. continued through 5 hours had no appreciable detrimental effect on the viability of garden beans. Cow peas were almost killed at 194° during a period of 5 hours, while their viability was unaffected at 140° for 1 hour. Soybeans were unaffected at 140°–194° through periods of 1, 3 and 5 hours. A temperature of 176° to 212° for 5 hours did not affect the viability of rye, while 230° for 2 hours reduced the viability 78 per cent. The viability of wheat was reduced 60 per cent at a temperature of 230° for 1 hour.—*J. J. Skinner.*

1322. Hamilton, Herbert C. **Digitalis leaves: effect on activity of temperature in drying.** Jour. Amer. Chem. Soc. 41: 125–130. 1919.

MISCELLANEOUS

1323. Faulwetter, R. C. **The angular leaf spot of cotton.** South Carolina Agric. Exp. Sta. Bull. 198. *41 p. Pl. 1–6, charts* 1–5. 1919.—See Bot. Absts. 2, Entry 1288.

1324. Koch, G. P., and J. R. Butler. **Cross-inoculation of legumes.** Soil Sci. 6: 397–403. 1918. See Bot. Absts. 3, Entry 362.

SOIL SCIENCE

J. J. Skinner, *Editor*

1325. Anonymous. **Kelp potash production.** Pacific Fisherman 17: 51. 1919. Note on amount produced.—*T. C. Frye.*

1326. Anonymous. **Hercules kelp plant may continue.** Pacific Fisherman 17: 46. 1919. —Note.—*T. C. Frye.*

1327. Anonymous. **California kelp fleet sold.** Pacific Fisherman 17: 52. 1919.—Note on probable activity in the kelp industry.—*T. C. Frye.*

1328. Beckwith, Charles S. **Report on cranberry investigations for the season of 1918.** Proc. Ann. Meet. Amer. Cranberry Growers' Assoc. 49: 3–15. *Pl. 1–6.* 1919.—See Bot. Absts. 2, Entry 1262.

1329. Bonazzi, Augusto. **On nitrification. II. Intensive nitrite formation in solution.** Jour. Bact. 4: 43–60. *Pl. 1, fig. 1–2.* 1919.—See Bot. Absts. 2, Entry 1317.

1330. Brown, P. E., and D. R. Johnson. **Effects of certain alkali salts on ammonification.** Iowa Agric. Exp. Sta. Res. Bull. 44. 1918.—The effect of the salts, Na_2CO_3, $NaHCO_3$, Na_2SO_4 and NaCl, on ammonification in the presence and in the absence of $CaCO_3$ was studied $CaCO_3$ when used alone exerted a marked beneficial influence on ammonification. The greatest effect occurred with 0.3 per cent, but up to 5 per cent no decrease occurred. With Na_2CO_3 a stimulating effect was observed at a concentration of 0.1 per cent; with $NaHCO_3$ at 0.05 per cent; with Na_2SO_4 at 0.1 per cent; and with NaCl at 0.005 per cent. Increased additions of these salts, however, failed to stimulate the ammonifiers but on the contrary retarded their action. For the soil used the point of toxicity was between 0.1 per cent and

0.2 per cent for Na_2CO_3; between 0.05 per cent and 0.1 per cent for $NaHCO_3$; between 0.1 per cent and 0.5 per cent for Na_2SO_4; and between 0.005 per cent and 0.01 per cent for NaCl. Increasing additions of all these salts brought about gradually increasing depressions in ammonification. When $CaCO_3$ was used with these salts it was found to reduce their toxicity to a considerable extent in every case, and in some instances made the toxic amounts of the salts actually stimulative to ammonification. Various combinations of the alkaline salts exhibited a greater toxic effect than the same salts in the same concentration exhibited individually.—*W. H. Ross.*

1331. DAVIDSON, J. **Do seedlings reduce nitrates?** Jour. Biol. Chem. 37: 143-148. 1919.—See Bot. Absts. 2, Entry 168.

1332. FRED, E. B. **The effect of certain organic substances on seed germination.** Soil Sci. 6: 333-349. *Pl. 1-4.* 1918.—Casein, powdered alfalfa, and peptone do not seriously injure seed germination in the soil unless used in large quantities (0.5 per cent or more). Calcium carbonate does not lessen the injurious effect on germination of large applications of alfalfa powder or casein. Sugar (about 1 per cent) added to the soil retards seed germination. In large amounts it decreases the percentage of germination. The retarding action of sugar on the germination of seeds is perhaps due to the large amount of carbon dioxide given off in the decomposition of the sugars.—*W. J. Robbins.*

1333. HARTWELL, B. L., AND F. R. PEMBER. **The presence of aluminum as a reason for the difference in the effect of so-called acid soils on barley and rye.** Soil Sci. 6: 259-279. *Pl. 1.* 1918.—The reason why acid soils are more harmful to barley than rye was investigated. Substances found to affect rye and barley about alike were sterilized soil, acid in nutrient solution, hydrogen peroxide, dihydroxystearic acid, manure extract, ammonium sulfate, potassium permanganate, chromium and silicon. Aluminum sulfate was more toxic to barley than rye. An examination of the aqueous extract of the acid soil used proved aluminum to be the element responsible for the different influence on the plants. Treatment of an acid soil with acid phosphate reduced the amount of active aluminum in the soil and caused remarkable growths of plants so sensitive to an untreated soil that previously no growth was possible. The results indicate that the practical advantage of phosphating and liming may often prove to be due to the precipitation of active aluminum quite as much as to supplying phosphorus as a nutrient and lime as a reducer of acidity. [See Bot. Absts. 2, Entry 1137.]—*W. J. Robbins.*

1334. MCCOOL, M. M., AND C. E. MILLER. **Soluble salt content of soils and some factors affecting it.** Michigan Agric. Exp. Sta. Tech. Bull. 43. 47 *p.* 1918. It is shown that the translocation of salts in the soil is due mainly to water movements. When large quantities of salt are present there is a movement to areas of lower concentration even when water movements are prevented. The accumulation of soluble salts on the surface of uncropped areas indicate that when water movements occur in the soil, salts are carried along with it. That these movements do not take place to any great depth is evidenced by the results of various investigations showing but little movement of water from the subsoil to the feeding zone of the roots. It is considered improbable that any great quantity of soluble material is supplied to the plants from depths below those of root penetration. The quantity of soluble salts in greenhouse soils may become too great for proper plant development, and in certain muck soils plant growth may be inhibited by the accumulation of soluble substances in the upper layers. Experiments made with corn and barley cultures show that plants may materially reduce the soluble salt content of the soil. Field experiments also gave evidence in the same direction, but to a less marked degree. As a result of laboratory experiments it would appear further that the constituents of soils which have been cropped for a long period of years go into solution at a somewhat slower rate than do those of the corresponding virgin soils. The rate of solution in the case of the soils studied is governed to some extent by temperature, it being more rapid at 25° than at temperatures approaching 0°. The moisture content, moreover, has a marked influence on the rate of solubility of the soil constituents,

and it is pointed out that biological activities probably play an important rôle in these phenomena. A seasonal variation in the salt content of field soils was shown by an examination of several soil classes at different periods during the spring and summer months. In the case of all the mineral soils tested, there was noted a tendency for the soil solution to reach a maximum concentration in the early summer when plant growth is at a maximum.—*W. H. Ross.*

1335. Potter, R. S., and R. S. Snyder. **The organic phosphorus of soil.** Soil Sci. 6: 321-332. 1918.—The authors test a method previously described of determining organic phosphorus in the soil. By comparing the hydrolysis curves of phytin and nucleic acid with the hydrolysis curves of the organic phosphorus in three soils they conclude that nucleic acid was not present but phytin or a pyrmidine nucleotide may have been present. [See Bot. Absts. 2, Entry 1123.]—*W. J. Robbins.*

1336. Richardson, A. E. V. **Agriculture. America and Australia compared.** Jour. Dept. Agric. Victoria 17: 1-20. 1919.

1337. Schryver, S. B., and N. E. Spear. **Investigations dealing with the state of aggregation. Part IV.—The flocculation of colloids by salts containing univalent organic ions.** Proc. Roy. Soc. London B, 90: 400-414. 1919.—See Bot. Absts. 2, Entry 1315.

1338. Stewart, Robert, and F. A. Wyatt. **Limestone action on acid soils.** Illinois Agric. Exp. Sta. Bull. 212: 267-296. 1919.—For the common prairie land of southern Illinois an application of 1 ton per acre of limestone once in 3 or 4 years is sufficient to keep the soil alkaline, after the initial acidity has been destroyed by heavier applications. Dolomitic limestones can be used successfully on acid soils. It is slightly more effective than high-Ca limestone in neutralizing the soil acidity, is more durable, and has no injurious effects. Limestone applied to the surface slowly penetrates into the subsurface, but does not seem to have any effect upon the acidity of the subsoil. The amount of native limestone found in the subsoil is a variable quantity. In some cases there is none present even at a depth of 40 inches, whereas in other cases it extends upward even slightly into the subsurface. The results indicate that chemical analysis may be depended upon to measure the acidity of the soil, the reduction of activity due to the action of limestone applied, and also to find the limestone still remaining in the soil.—*W. H. Ross.*

1339. Tottingham, W. E. **A preliminary study of the influence of chlorides on the growth of certain agricultural plants.** Jour. Amer. Soc. Agron. 11: 1-32. 1919.—See Bot. Absts. 2. Entry 817.

1340. Turrentine, J. W. **Progress of the kelp potash industry.** Pacific Fisherman Year Book 1919: 111.—General condition of the industry on the Pacific Coast. A general statement of the work of the experimental plant of the U. S. Bureau of Soils at Summerland, California.—*T. C. Frye.*

1341. Van Alstine, E. **The movement of plant food within the soil.** Soil Sci. 6: 281-309. 1918.—Analyses were made of the amount of phosphorus, calcium, magnesium, nitrogen, potassium, organic carbon and limestone in samples of soil from the surface 3 inches and two strata below the surface of fertilized and unfertilized plots under treatment for 54 years at Rothamsted, England. Analyses were also made of the phosphorus in samples from fertilized and unfertilized plots under treatment since 1882 at State College, Pa., and from plots which have been treated for 20 years at Strongsville, Ohio. The author concludes that when phosphorus is used as a fertilizer it remains almost where it is placed in the soil until removed in crops or by some process like erosion. The addition of alkali salts (sulfates of potash, soda and magnesia) seems to encourage the utilization of phosphorus by legumes. Loss of nitrogen through drainage is very small when crops are kept on the ground through the growing season. Potassium though easily and quickly fixed in the soil is subject to move-

ment within the soil as a result of fertilizing with other salts. The loss of Mg is brought about by the use of ammonium salts. Ammonium salts also increase the loss of Ca from the soil. A review of the literature is given.—*W. J. Robbins.*

1342. WAKSMAN, SELMAN A., AND ROLAND E. CURTIS. **The occurrence of actinomycetes in the soil.** Soil Sci. 6: 309–319. 1918.—The number of bacteria developing on an albumen agar at 25°C. in 3 days was compared with the number of actinomycetes developing at the same temperature in 14 days from 25 soils of North America and the Hawaiian Islands. The per cent. of actinomycetes varied from 8.5 to 46.0 per cent. with an average of 17 per cent. The soils higher in undecomposed organic matter gave the larger per cent. of actinomycetes colonies. By isolation of the actinomycetes and separation into types some were found to be of general distribution.—*W. J. Robbins.*

TAXONOMY OF VASCULAR PLANTS

J. M. GREENMAN, *Editor*

SPERMATOPHYTES

1343. ANONYMOUS. **Diagnoses Africanae. LXXI.** Bull. Misc. Inf. Kew 1918: 202–207. 1918.—This article contains descriptions of the following plants new to science: *Raphidiocystis ugandensis* Rolfe, *Salvadora angustifolia* Turrill, **Apteranthe** C. H. Wright (a new genus of the Amarantaceae), *A. oligomeroides* C. H. Wright, *Loranthus aldabrensis* Turrill, *Phyllanthus Cheloniphorbe, Cluytiandra peltata, C. Baronii, Acalypha claoxyloides, A. Fryeri* Hutchinson, and *Widdringtonia dracomontana* Stapf.—*J. M. Greenman.*

1344. BENNETT, ARTHUR. **Notes on British Potamogetons.** Jour. of Bot. 57: 10–20. 1919.—Notes "suggested by a perusal of Herr Hagstrom's Critical Researches on the genus" (Jour. Bot. 55: 115. 1917.) Brief notes on nomenclature, morphology, taxonomy, and distribution. Thirty-eight species and several varieties are treated, several of which are found also in America. The nomenclature of some American species is affected.—*K. M. Wiegand.*

1345. BOULGER, G. S. **Juncus acutus L.: a correction.** Jour. of Bot. 57: 21. 1919. - The plant reported from the Andrews Herbarium as this is really *J. glaucus.*—*K. M. Wiegand.*

1346. BROADWAY, W. E. **The wild orchids of Tobago.** Bull. Dept. Agric. Trinidad and Tobago 17: 95–100. 1918.—List of 52 species.—*D. Reddick.*

1347. CRAIB, W. G. **Contributions to the flora of Siam. Additamentum X.** Bull. Misc. Inf. Kew 1918: 362–371. 1918.—The following flowering plants are described as new to science: *Evodia glomerata, Gynostemma siamaca, Schefflera siamensis, Lysimachia lancifolia,* **Damrongia** (a new genus of the Gesneriaceae), *D. purpureo-lineata, Petrocosmea Kerrii, Ruellia bella, Asystasia salicifolia, Vitex Pierrei, Elsholtzia Winitiana, Croton siamensis, Dalechampia elongata, Celtis Collinsae,* and *Gironniera longifolia.*—*J. M. Greenman.*

1348. FAWCETT, WILLIAM, AND A. B. RENDLE. **Notes on Jamaica plants.** Jour. Bot. 57: 65–68. 1919.—[Continued from Jour. Bot. 55: 271. 1917.] Euphorbiaceae discussed; the following species described as new: *Phyllanthus* (sect. *Euphyllanthus*) *minor, P.* (sect. *Xylophylla*) *inaequaliflorus,* and *P.* (sect. *Xylophylla*) *Coxianus.* Critical notes on several other species are given. One new combination, *P. glabellus* (L.), is made.—*K. M. Wiegand.*

1349. GAGNEPAIN, F. **Lagerstroemia nouveaux d'Indo-Chine.** [**New Lagerstroemias from Indo-China.**] Not. Syst. 3: 355–363. Dec. 30, 1918.—The following new species are described: *Lagerstroemia angustifolia, L. cochinchinensis, L. crispa, L. Duperreana, L. petiolaris* Pierre, *L. corniculata, L. glabra, L. Lecomtei, L. siamica, L. Spireana,* and *L. Thorelii* Gagnep.—*J. M. Greenman.*

1350. Gagnepain, F. **Quelques Illigera nouveaux.** [Some new Illigeras]. Not. Syst. 3: 363-366. Dec. 30, 1918.—The following new species of China are described: *Illigera Fordii*, *I. glandulosa*, *I. Pierrei*, and *I. Thorelii*.—*J. M. Greenman.*

1351. Gagnepain, F. **Deux Gisekia et Mollugo nouveaux d'Indo-Chine.** Not. Syst. 3: 367-368. Dec. 30, 1918.—The author describes *Gisekia Pierrei* and *Mollugo herniarioides* as new species from China.—*J. M. Greenman.*

1352. Gagnepain, F. **Seconde espèce, Tonkinoise, d'un genre monotype Chinois: Carrierea Vieillardii Gagnep.** [**A second species from Tonkin of a monotypic Chinese genus: Carrierea Vieillardii Gagnep.**] Not. Syst. 3: 368-371. *Fig. 1-6.* Dec. 30, 1918.—The species mentioned in the title is described and illustrated, as new to science; it was collected in the province of Tonkin, China, and is dedicated to M. Vieillard, inspector of agriculture at Hanoi. —*J. M. Greenman.*

1353. Gagnepain, F. **Quelques Barringtonia nouveaux.** [**Some new Barringtonias.**] Not. Syst. 3: 383-385. Dec. 30, 1918.—Four new species are described from China, namely *Barringtonia annamica*, *B. comosa*, *B. longipes*, and *B. micrantha*.—*J. M. Greenman.*

1354. Koorders, S. H. **Abbildung und Beschreibung von Crateriphytum moluccanum Scheffer.** [**Illustration and description of Crateriphytum moluccanum Scheffer.**] *8 p., double table (1 a, 1 b).* Privately printed: Batavia (Java), Jan. 31, 1919.—A detailed description of the genus and the first published description of the species. The genus, a monotypic one from Amboina, is shown to be allied to *Couthovia* of the Loganiaceae.—*E. D. Merrill.*

1355. Maiden, J. H. **A critical revision of the genus Eucalyptus.** Vol. IV, Part 6. *P. 137-177., Pl. 148-151.* William Applegate Gullick: Sydney, 1919.—Seven species and several varieties are described and illustrated, namely, *Eucalyptus occidentalis* Endlicher with four varieties one of which is new, *E. macrandra* F. v. M., *E. salubris* F. v. M. with one new variety, *E. cladocalyx* F. v. M., *E. Cooperiana* F. v. M., *E. intertexta* R. T. Baker, and *E. confluens* (Fitzgerald) Maiden.—*J. M. Greenman.*

1356. Mott, F. Blount. **Impatiens glanduliferum Royle.** Jour. Bot. 57: 69. 1919. —Record of its occurrence near Peterson, Wales?—*K. M. Wiegand.*

1357. Nelson, J. C. **The name Toxylon again.** Amer. Bot. 25: 21-23. 1919.—The generic name of the Osage Orange is shown to have been originally published by Rafinesque as *Ioxylon*, later changed by him to *Joxylon* and still later to *Toxylon*. The specific name was originally *pomiferum* but with the final change in the generic name Nuttall's *aurantiacum* was used.—*W. N. Clute.*

1358. Osterhout, Geo. E. **Additions to the flora of Colorado.** Bull. Torrey Bot. Club 46: 53-56. 1919.—The following new species are described: *Nuttallia hastata*, *Phacelia formosula*, *Oreocarya monosperma*, *Mertensia Clokeyi*, and *Agoseris frondifera*.—*P. A. Munz.*

1359. Pennell, Francis W. **Concerning duplicate types.** Torreya 19: 13-14. 1919.— In place of the expression "duplicate type," defined by Hitchcock (Science 21: 832) as "a specimen of the same series or set as the type as indicated by the number or other data," the term *isotype* is proposed.—*J. C. Nelson.*

1360. Pennell, Francis W. **Some remarks upon Limosella.** Torreya 19: 30-32. 1919. —*Limosella aquatica* L. of the Rocky Mountain region and *L. subulata* Ives are described and contrasted. The Rocky Mountain plant cannot be distinguished from that of Eurasia. *L. aquatica* is the most widely distributed member of the Scrophulariaceae, and occurs on all the continents. The deviations are mostly slight and remote; but it has "thrown off" suggestively parallel species, of which *L. subulata* may possibly be closely duplicated in the Vancouver Island region and in Argentina. *L. subulata* has been studied from a colony about

Old Sams Pond, Point Pleasant, New Jersey. Specimens from this and other from water ponds along the Atlantic coast are partially though not constantly recognizable from those of saline habitats. The range of *L. subulata* must be extended southward to Chesapeake Bay. The more southern plants are coarser, usually with wider and longer leaves than the typical New England form. While primarily a plant of brackish soil, it is fully able to meet a non-saline environment.—*J. C. Nelson.*

1361. SPENCE, MAGNUS. **Juncus effusus spiralis.** Jour. Bot. **57**: 69. 1919.—Record of its occurrence in Orkney.—*K. M. Wiegand.*

1362. STAPF, OTTO. **Gramineae. Flora of Tropical Africa 9**: (part 2) 193–384. 1918.—Part 1, which appeared in 1917, carried the account of the grasses through the Andropogoneae as far as the genus *Schizachyrium*. Part 2 is a continuation of this tribe as far as the genus *Exotheca*. The key to genera in part one shows that there are still seven genera of Andropogoneae to appear. The subgenera of Hackel are given generic rank by Stapf, such as, *Sorghum, Chrysopogon, Amphilophis, Dichanthium, Schizachyrium, Cymbopogon*, and *Heteropogon*. The keys and descriptions are unusually ample. The citations are not only of synonyms but also of the bibliography of each name. Specimens are fully listed. The new species in this part are distributed as follows: *Schizachyrium* 4, *Andropogon* 12, *Cymbopogon* 2, *Hyparrhenia* 16.—*A. S. Hitchcock.*

1363. TURRILL, W. B. **Contributions to the flora of Macedonia. I.** Bull. Misc. Inf. Kew **1918**: 249–341. 1918.—The present paper "is based on collections made, in their spare time, by men engaged on active service with the British Salonika Forces." The region concerned is primarily that between Salonika and the Struma Plain and Krusa Balkan. An account of the topography, geology, meterology, and ecology precedes a systematic enumeration of the plants collected. Only spermatophytes and ferns are recorded; the list includes 625 species and varieties. The following are new: *Silene Harrisii, Vicia grandiflora* Scop. var. *sordida* Griseb. mutant *dissecta, Saxifraga graeca* Boiss. & Heldr. var. *Russellii, Jurinea arachnoidea* Bge. forma *integrifolia*, and *Campanula Sprunerіana* Hmpe. var. *lepidota*.—*J. M. Greenman.*

1364. VAN SLOOTEN, D. F. **Bijdrage tot de kennis der Combretaceen en Flacourtiaceën van Nederlandsch-Indie. [Contribution to the knowledge of the Combretaceae and Flacourtiaceae of the Dutch-Indies.]** 8vo. *170 p. Pl. 1–2. Index.* A. Oosthoek. Utrecht. 1919.—The author presents a synoptical revision of these two families as represented in the Dutch East Indies. The following new species and varieties are described: *Terminalia Soembawana, T. borneensis, T. longespicata, Combretum glandulosum, Quisqualis sulcata, Q. sulcata* var. *subcordata* of the Combretaceae and *Hydnocarpus pentagyna, Taraktogenos polypetala, Ryparosa borneensis, Homalium novoguineense, Flacourtia Zippelii*, and *F. lanceolata* of the Flacourtiaceae.—*J. M. Greenman.*

1365. WILLIAMS, KATHERINE A. **A botanical study of skunk-cabbage, Symplocarpus foetidus.** Torreya **19**: 21–29. *Pl. 1–2, fig. 1–13.* 1919.—See Bot. Abstr. 2, Entry 981.

1366. WILLIS, J. C. **The flora of Stewart Island (New Zealand): a study in taxonomic distribution.** Ann. Bot. **33**: 23–46. *2 fig.* 1919.

PTERIDOPHYTES

1367. KILLIP, ELLSWORTH P. **Fern hunting in Panama.** Amer. Fern. Jour. **9**: 5–17. **1919.**

1368. MACCAUGHEY, VAUGHAN. **The Pala or Mule's-Foot Fern (Marattia Douglasii (Presl) Baker) in the Hawaiian Archipelago.** Torreya **19**: 1–8. 1919.—See Bot. Abstr. 2, Entry 979.

1369. MAXON, WILLIAM R. **Notes on American Ferns. XIII.** Amer. Fern Jour. **9**: 1–5. 1919.—The author lists seven species of ferns, the range of which has been extended. The distinguishing characters of *Cheilanthes Eatoni* Baker and *C. tomentosa* Link are contrasted.—*F. C. Anderson.*

1370. PALMER, ERNEST J. **Texas Pteridophyta. I.** Amer. Fern Jour. 9: 17–22. 1919.—The author presents a list of thirteen species with habitat and localities, a number of which are new for some of the species. One species, *Lycopodium adpressum* (Chapm.) Lloyd & Undw., is probably new for the state.—*F. C. Anderson.*

1371. PFEIFFER, NORMA E. **Queer Quillworts.** Quart. Jour. Univ. North Dakota. 9: 235–244. *1 pl.* 1919.—Quillworts are carefully described in a popular article, in the hope that botanists and casual collectors may be familiarized with the forms, and stimulated to look for species in the Dakotas. Reasons for their obscurity and their unpopularity with the collector are emphasized. A brief historical summary, and the geographic distribution and habitat of *Isoetes* are given.—*Wanda Weniger.*

INDEX TO AUTHORS' NAMES IN VOLUME II

[It was impossible to supply subject index for volumes I and II as was intended. A subject index for the first six volumes of BOTANICAL ABSTRACTS will be supplied, after volume VI.]

(References are to Entry numbers; an asterisk before a number signifies that the entry referred to is by citation alone, no abstract.)